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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,853	06/26/2003	Masahiro Matsuo	R2180.0170/P170	3711

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EXAMINER	
RILEY, SHAWN	

ART UNIT	PAPER NUMBER
2838	

DATE MAILED: 10/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/603,853	MATSUO ET AL.	
	Examiner	Art Unit	
	Shawn Riley	2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8-16 and 18-26* is/are rejected.

7)☒ Claim(s) *7 and 17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *jun03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. Eg., Switching regulator with external signal to adjust feedback signal.

Claim Rejections - 35 U.S.C. § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 8, 11-13, 18, 21-22, and 24-26[1] are rejected under 35 U.S.C. §102(b) as being fully anticipated by Takuma (U.S. Patent 4,810,948). Takuma shows,[2] (in, e.g., the(ir) figure 2 and corresponding disclosure)

As to claim 1 (likewise claim 11, 21);

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1 For method claims, note that under MPEP 2112.02, the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claimed, then the method claimed will be considered to be anticipated by the prior art device. When the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently perform the claimed process. In re King, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986). Therefore the previous rejections based on the apparatus will not be repeated.

2 Note claims will be addressed individually and the material in parentheses are the examiner's annotated comments. Further unless needed for clarity reasons, recited limitation(s), will be annotated only upon their first occurrence. Annotated claims begin with the phrase "As to claim". Claims that are not annotated are seen as having already had the invention(s) addressed previously in an annotated claim. Bolded words/phrases indicate rejected material based 112 paragraph rejections. Underlined words/phrases indicate objected to material.

A power supply apparatus, comprising: an input terminal having an input voltage applied thereto from a direct current power source (input); an output voltage generator configured to generate a constant output voltage (OUTPUT) based on said input voltage; an output terminal of said output voltage generator outputting said constant output voltage; a reference voltage generator (Reference Voltage Generator Circuit) configured to generate a reference voltage; a voltage divider (R1-R(2n-1), see, e.g, column 1 lines 50-66) having an output point (input into multiplexer), said voltage divider configured to accept said constant output voltage from said output terminal of said output voltage generator and further configured to divide said constant output voltage into a divided voltage in accordance with a voltage dividing ratio which is variable in response to an externally-input control signal (from data register) and to output said divided voltage to said output point of said voltage divider; and a voltage control circuit configured to control said output voltage generator to regulate said constant output voltage such that said divided voltage from said voltage divider is equalized to said reference voltage (the equalization occurs via the data register).

As to claim 3 (and likewise 2, 12 and 13);

The power supply apparatus as defined in claim 1, wherein said voltage divider comprises: a first resistor circuit including a plurality of resistors (e.g., R1 and R2); a first switch circuit configured to connect in parallel at least one of said plurality of resistors (e.g., the first input to the multiplexer connected to the node

between R1 and R2, by definition, a multiplexer has switches which connect to one of a variety of inputs) included in said first resistor circuit between said output terminal and said output point of said voltage divider in response to an input control signal (again either WE/BUS); a second resistor circuit (R3-R(2n-1)) including a plurality of resistors connected in series between said output point of said voltage divider and a common ground of said direct current power source; a second switch circuit (same reasoning as applied to the first switch connected to, e.g., the node between R3 and R4) configured to make a short circuit in at least one of said plurality of resistors included in said second resistor circuit in response to said input control signal; and a switch control circuit (e.g., DATA REGISTER) configured to generate said input control signal in response to said externally-input control signal and to control said first and second switch circuits with said input control signal to change the voltage dividing ratio.

As to claim 4 (similarly claim 22);

The power supply apparatus as defined in claim 1, wherein said output voltage generator includes a switching transistor (OUTPUT CONTROL TRANSISTOR) performing a switching operation for outputting the input voltage applied by the direct current power source in accordance with a control signal from said voltage control circuit, wherein said voltage control circuit comprises: an error amplifier (OP AMP) amplifying an error of said divided voltage output from said output point of said voltage divider relative to said reference voltage; a

control circuit (output of OP AMP) configured to generate said control signal in accordance with an output signal from said error amplifier to control said switching operation of said switching transistor; and a smoothing circuit configured to smooth an output signal from said switching transistor and to output said smoothed output signal to said output terminal.

As to claim 8 (likewise claim 18);

The power supply apparatus as defined in claim 1, wherein said output voltage generator includes an output control transistor (OUTPUT CONTROL TRANSISTOR) controlling an output of a current applied by the direct current power source in accordance with a control signal from said voltage control circuit, wherein said voltage control circuit comprises an error amplifier controlling an operation of said output control transistor such that said divided voltage of said voltage divider is equalized to said reference voltage.

Claim Rejections - 35 U.S.C. § 103

3. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

> Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

4. Claim 5-6, 14 and 23 are rejected under 35 U.S.C. § 103 as being unpatentable over Takuma (U.S. Patent 4,810,948) in view of Leonowich (U.S. Patent 6,504,350). The Takuma reference discloses the limitations of the invention as claimed as described above and including a switching transistor (OUTPUT CONTROL TRANSISTOR) performing a switching operation for outputting the input voltage applied by the direct current power source in accordance with a control signal from said voltage control circuit, wherein said voltage control circuit comprises: an error amplifier (OP AMP) amplifying an error of said divided voltage output from said output point of said voltage divider relative to said reference voltage; a control circuit (output of OP AMP) configured to generate said control signal in accordance with an output signal from said error amplifier to control said switching operation of said switching transistor. However, Takuma does not show a smoothing circuit. Leonowich shows (see Figure 2 element 44) a smoothing circuit. It would have been obvious at the time the invention was made to utilize a smoothing circuit of Leonowich into the circuit of aaa for the reason of Takuma for the reason of stabilizing an output voltage. See column 3 lines 33-36. That is it is well know to add an output capacitance for the reason of stabilizing the load with a source (well) of energy which can either supply needed power or absorb excessive power.

As to claim 5 (and likewise to claims 6, 9-10, 15-16, and 19-20);

> The power supply apparatus as defined in claim 4, wherein said reference voltage generator, said voltage divider, said error amplifier, and said control circuit are

integrated into a single integrated circuit. (See, e.g., Leonowich, claim 1 discussing the integration of the circuitry). Further, It would have been obvious at the time the invention was made to integrate the circuitry since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the are *Howard v. Detroit Stove Works,* 150 U.S. 164 (1893).

Allowable Subject Matter

5. Claims 7 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. As allowable subject matter has been indicated, applicant's response must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 C.F.R. § 1.111(b) and section 707.07(a) of the M.P.E.P.

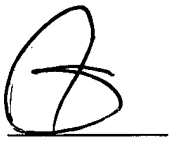
7. The following is an examiner's statement of reasons for allowance: No prior art uncovered anticipates or renders obvious applicant(s) claimed circuitry including a transistor which is operated and controlled by said control circuit to function as a flywheel diode, and said transistor, said switching transistor, said voltage divider, said switching transistor, said error amplifier, and said control circuit are integrated into a single integrated circuit.

Conclusion

Any inquiry from other than the applicant/attorney of record concerning this communication or earlier communications from the Examiner should be directed to the Patent Electronic Business Center (EBC) at 1.866.217.9197. Any inquiry from a member of the press

concerning this communication or earlier communications from the Examiner or the application should be directed to the Office of Public Affairs at 703.305.8341. Any inquiry from the applicant or an attorney of record concerning this communication or earlier communications from the Examiner should be directed to Examiner Riley whose telephone number is 571.272.2083. The Examiner can normally be reached Monday through Thursday from 7:30-6:00 p.m. Eastern Standard Time. The Examiner's Supervisor is Mike Sherry who can be reached at 571.272.2084. Any inquiry about a case's location, retrieval of a case, or receipt of an amendment into a case or information regarding sent correspondence to a case **should be directed to 2800's Customer Service Center** at 571.272.2815. Any papers to be sent by fax MUST BE sent to fax number 703.872.9306. Any inquiry of a general nature of this application should be **directed to the Group receptionist** whose telephone number is 571.272.2800. Status information of cases may be found at http://pair-direct.uspto.gov wherein unpublished application information is found through private PAIR and published application information is found through public PAIR. Further help on using the PAIR system is available at 1.866.217.9197 (Electronic Business Center).

October 04



Shawn Riley
Primary Examiner